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STUDENT ESSAY

1 NOVEMBER 1976

(6) A REVISED CONSTRUCTION MANAGEMENT TECHNIQUE FOR INSTALLATION COMMANDERS AND ENGINEERS.

(9) BY Student essay,

(10) COLONEL CHARLES L. SHREVES
CORPS OF ENGINEERS

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USAWC ESSAY

A REVISED CONSTRUCTION MANAGEMENT TECHNIQUE FOR INSTALLATION COMMANDERS AND ENGINEERS

by

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1 November 1976

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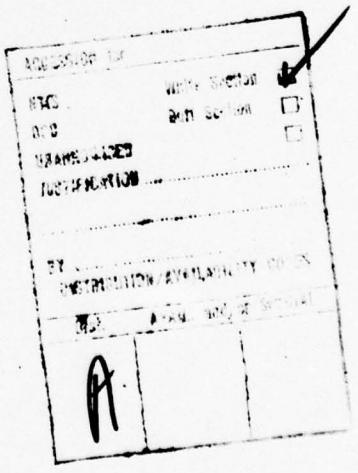

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Chapter 1

INTRODUCTION TO THE STUDY

Background

The Corps of Engineers is the Department of Defense's designated construction agency for all construction in the United States, and for much of the rest of the world where defense construction is accomplished.

One problem common to engineers engaged in design, construction, maintenance, or repair is the accurate determination of the most urgent requirements. District, division, and facilities engineers are confronted with this problem constantly, and strive to solve it through objective evaluation of each project. For the Corps of Engineers district or operating division engineer engaged in military construction for 10 or more customers; Air Force, Navy, Army, Army/Air Force Exchange Service, Nonappropriated Funds, Dependent Schools, etc.; it is not uncommon to have 500 or more projects available for design at one time. A workload of this magnitude can require longer than a year for design, with new projects added regularly, and each customer desiring expeditious processing, design, and contracting of their projects. Individual project managers may have in excess of 50 projects to manage.

THE STUDY

Statement of the Problem

There is a void in published guidance to assist engineers and commanders select the most urgent requirements based on scientific analysis, rather than personal bias based on objective evaluation.

Statement of the Goal

This study is intended to develop a management technique to optimize the benefits received from funds appropriated by Congress for military construction. This will be accomplished by quantifying the value of projects to determine urgency, which will reduce bias in the selection of the order in which projects should be accomplished.

Value of an Answer

Time, personnel, and assets are finite. Frequently, and in Europe--usually, the workload far exceeds the engineering capability. Work force cannot be increased because of the Nunn Amendment which caused the establishment of the number of employees that can be hired for engineering. If we assume that each newly assigned engineer manager arrives with the tools necessary to cope with problems concerning the design, installation, and improvement of integrated systems of men, materials, and equipment, he still lacks published guidance concerning his major problem area: Priority of work accomplishment.

Chapter 2

DISCUSSION

The purpose of this study is to develop a system to quantify the merits of projects to determine that the most urgent projects are accomplished first and that the workload is evenly distributed. This is not to indicate that a competent project manager cannot handle more than one or two projects simultaneously. The opposite is almost always true. The most urgent project is usually not so difficult to select either. There will have been a lot of command correspondence, guidance, questions, pleading, threats, and urging from several directions. However, at the end of X period of time required to accomplish that "most urgent" project, there will be requests for data on the status of several others which should not have "been in your office all that time without measurable progress." Systems used by project engineers run the gamut from doing a little bit on each to show progress over the complete scale during a given period, to completion of two projects with zero progress on all others.

If, through the development of a model, which results in a checklist with which project managers and customers can jointly rate the merit of a project quantitatively, and reach an agreed numerical value on an established scale, the urgency and priority for accomplishment will be clear-cut. Such a system will still require revision monthly to account for the changes in ratings

brought about by additions and the passage of time.

Variables

The situation, time, and place in terms of world events and geography play a role in establishing the variables which affect the outcome of a requested construction project. Known variables are commanders, installations, mission changes of units, funds available, technical capability of the engineering staff at the installation, time available, and the procedure used to select the projects to be accomplished.

1. Commanders. General Bruce C. Clark stated, "The personality of the commander has an enormous influence on the unit. In fact, the unit may be said to be nothing but an extension of the commander's personality."[1] As a variable in this study, nothing else need be stated except that the personality of the commander does play a role in the selection and programing of construction projects.

2. The Installation. Construction requirements vary depending on the mission, geographical location, type, and number of units assigned, and physical plant size of the installation. If the mission is training, the type mission-requirement-projects requested will be normally associated with training facilities such as classrooms or obstacle courses. Contrast this with the operation of an administrative complex where alterations such as movement of partitions are common or with a large permanent

installation assigned many missions. In Europe, the general defense plan and other mission requirements must be considered. As can be expected, procedures for selecting and programing projects will be different in each location.

3. Mission Changes of Units. The assignment of new missions with allocation of funds for their implementation creates changes in any program of construction projects. A strong unit commander assigned a new or additional mission will immediately attempt to have the facilities, district, or division engineer undertake the project without regard to the other projects previously approved and programed. It must be realized that emergency type projects can and will occur and allowances made for them. At the same time, urgent requirements which have been programed cannot be ignored. In this time of technological advancement and modernization of equipment, construction projects to modify facilities to accept the new gear can be expected frequently. The degree of urgency with which the new gear is required varies.

4. Assets and Resources Available. The engineer will seldom have sufficient assets available to accomplish all the work requested as expeditiously as desired.

Chapter 3

RESEARCH FOR A SYSTEM TO QUANTIFY PROJECTS AND ESTABLISH PRIORITIES

Any system used to select projects and arrange them in priority order involves analysis of the variables. Therefore, a model to quantify the merits of projects and assign a priority to each will be dependent upon the numerical value assigned each variable. One variable difficult to quantify but must be considered as a factor is the personality of the unit commander or customer attempting to justify his project. The desire to eliminate this factor and rate each project according to the factors which make it a high priority requirement led to investigation of industry's procedure for rating the relative value of jobs of individuals. Probably the best known and most widely used job rating plan is the National Electric Manufacturers Association Job Rating Plan (NEMA)[2].

NEMA Related to Project Evaluation

It should be possible to use the procedures of NEMA to establish a similar model for quantifying the merits of construction projects since the NEMA plan is one of the simplest and most easily understandable point-scoring plans in existance. It will not be an "exact science," but represent a business-like and scientific approach to the problem, as is the case in evaluating one job against another.

The first step in preparing this model is to determine degree definitions and assign values for each. When using it later, the first step would be to thoroughly brief the planning staff members on the factor and degree definitions until they all have the same understanding and interpretation of them. In some circumstances, it may be necessary to decide by committee vote or agreement with the customer or the values and degree definitions desired. The important thing is that a scientific approach to the problem of selecting projects, rating each variable according to weight, is used rather than letting one variable determine the outcome.

Presented in Table 1 is a proposed point system of project evaluation. The maximum number of points any project could receive is 440 and the minimum is 90.

Table 1

Proposed Point System of Project Evaluation

Points Assigned to Factors and Key to Priorities					
Factors	1st Degree	2d Degree	3d Degree	4th Degree	5th Degree
Mission Essentiality	14	28	42	45	72
Improved Mission Accomplishment	12	24	36	48	60
Safety	12	24	36	48	60
Command Interest	14	28	42	56	70
Project Cost Amortization	8	16	24	32	40
Health, Welfare, and Morale	10	20	30	40	50
Time Restraints	10	20	30	40	50
Engineering Effort Required	8	16	24	32	40

Mission Essentiality: This factor measures the direct contribution of the project to performance of national security and would expect to give highest ranking to improved capability to perform missions required by the general defense plan, such as air defense, ammunition storage, communication relay, intelligence, etc.

1st Degree: Effect marginal or not a consideration.

2d Degree: Capability improved by less than one-third.

3d Degree: Improved capability for one phase of the general defense plan

Table 1 (continued)

	accomplishment for one battalion or more, or improved by more than one-third.
4th Degree:	Greatly improved capability for the general defense plan for one brigade or more.
5th Degree:	Absolutely essential and would immediately improve national security.

Improved Mission Accomplishment: This factor measures the affect the project will have on the ability of the requesting unit to perform its assigned mission.

1st Degree:	Mission accomplishment effect marginal or not a consideration.
2d Degree:	Mission accomplishment capability improved less than one-half.
3d Degree:	Mission accomplishment capability improved more than one-half but less than twice what it was.
4th Degree:	Mission accomplishment twice what it was or allows accomplishment of a unit mission assigned by higher headquarters which cannot be accomplished without approval of this project.
5th Degree:	Mission assigned by Congress or the executive branch of government as a special program.

Table 1 (continued)

Safety: This factor measures the possible injury to personnel or equipment if the project is not accomplished.

1st Degree:	Safety of personnel or equipment marginal or not a consideration
2d Degree:	Reasonable care would prevent accidents.
3d Degree:	Compliance with strict additional safety requirements necessary until project completed.
4th Degree:	Constant attention required to prevent accidents.
5th Degree:	Possible loss of life or serious injury to personnel or damage to equipment exceeding cost of project could be related directly to this project.

Command Interest: This factor measures the project as viewed by top management. Point values and degree definitions may vary with commands. Generally, it is used to grant bonus points to projects in which top management has expressed definite interest, or it measures the urgency of the project.

1st Degree:	An urgent requirement supported by the commander at the next level above the requesting unit.
2d Degree:	Expressed interest by commanders at next two levels above the requesting unit.

Table 1 (continued)

3d Degree:	Expressed interest by the installation commander.
4th Degree:	Command interest strong enough to make accomplishment this year desirable.
5th Degree:	One of the highest priority projects for the year which top management desires started immediately.

Project Cost Amortization: This factor measures the length of time required to amortize the cost of the project. Consideration should be given to savings in time for personnel, converted to dollar value, or in the case of utility systems and similar items, the savings because of reduced operating cost.

1st Degree:	Cost of the project would be amortized over a long period of time or cost amortization information not available.
2d Degree:	Cost of project will be amortized in 3 years.
3d Degree:	Cost of project will be amortized in more than 2 but less than 3 years.
4th Degree:	Cost of project will be amortized in more than 1 but less than 2 years.
5th Degree:	Cost of project will be amortized in less than 1 year.

TABLE 1 (continued)

Health, Welfare, and Morale: This factor measures the surroundings desired corrected by the project and the effect of the surroundings on troop morale. Consider the presence, relative amount of, and continuity of exposure to dust, dirt, heat, fumes, cold, noise, vibration, wetness, etc. Don't confuse with safety.

1st Degree:	Ideal conditions, complete absence of disagreeable elements, or not applicable.
2d Degree:	Good conditions. May involve occasional exposure to some of the elements listed above, or occasional disagreeable circumstances. Morale affected marginally.
3d Degree:	Somewhat disagreeable conditions due to exposure to one or more of the elements listed, but where these elements are not continuous if several are present. Morale of troops is affected and can be measured.
4th Degree:	Continuous exposure to several disagreeable elements or one particularly disagreeable element. Morale will be seriously affected if not corrected.
5th Degree:	Continuous and intensive exposure to several disagreeable elements. A morale problem requiring urgent attention.

Time Restraints: This factor considers that a project's urgency can vary with the passage of time and considers time available

Table 1 (continued)

before design must be started. Urgent minor construction projects must have design completed within 90 days of approval by Congress and construction started 90 days later. Also, an appropriation of funds financed by operations and maintenance, Army (OMA) funds which must be obligated before the end of the fiscal year becomes more urgent as the fiscal year end nears.	
1st Degree:	Time is not really a factor.
2d Degree:	Six months or less are available.
3d Degree:	Four months or less are available.
4th Degree:	Two months or less are available.
5th Degree:	One month or less is available.

Engineering Effort Required: This factor measures the relationship of the engineering effort required to prepare the plans and specifications or accomplish the work in-house and considers the limited staff of the engineer and his requirement to maximize accomplishment of design in order to increase construction placement.

1st Degree:	Preparation of detailed technical plans and specifications required which will cause a real drain on the engineer effort available.
2d Degree:	Project for which standard

Table 1 (continued)

	specifications are not available or, if available, require extensive modification.
3d Degree:	Project will be accomplished by engineer in-house personnel.
4th Degree:	Engineer has standard specifications available and can program project in routine manner.
5th Degree:	Engineer effort minimal.

Evaluation of the Proposed Point System of Project Evaluation

In order to evaluate the proposed procedure, 10 projects common to Europe were selected and rated. The sample presented is small for instructional purposes, but the system has been tested on samples as large as 100 projects. A Sample Project Priority Substantiating Data Form was prepared for each. These forms are in Appendix A. The results are summarized in Table 2. The Sample Project Priority Substantiating Data Forms were prepared for this study to indicate the reasons for the ratings. In a planning meeting, the substantiating data could be taken directly from the project request, DD Form 1391 or DA Form 2701, and entered on a summary sheet similar to Table 2. Each project can be evaluated while the customer is present to answer questions concerning degree determinations. A simple graph which can be

prepared and updated after each planning meeting is shown in Figure 1. Using this graph as a management tool, the project engineer could advise each customer of the approximate priority of his project. For example, if evaluation of a project gave it 300 points, the customer would be told that past experience indicates that approximately 30 percent of the projects are rated higher on the priority list, but that his project should be included among those accomplished this quarter.

This information will allow the customer to plan ahead. He will leave with the knowledge that his project will be accomplished. Previously he would have known only that his project had been accepted. If, to look at the other end of the graph, a project received only 210 points, he learns that only 20 percent of the projects have been rated lower in the past. The customer will still know that only the merit of the project determined its rating, and there was nothing personal in the decision. Realizing that you will not realistically be able to do his project right away, the customer can consider any other options available to him (if he has any) to get the project designed more rapidly, i.e. open-end architect engineer (AE) contracts or his own in-house design.

Table 2

Project Evaluation Summary

Projects	Mission Essentiality	Improved Mission Accomplishment	Safety	Command Interest	Project Cost Amortization	Health, Welfare, and Morale	Time Restraints	Engineering Effort Required	TOTAL	RANK
Upgrade Ammunition Storage Facilities	72	60	60	70	8	10	50	32	362	1
Troop Barracks for Guards at Remote Special Weapons Site	28	24	24	56	8	50	10	32	232	7
Facilities for Stationing Brigade in Northern Germany	72	72	12	70	8	10	50	8	302	3
Dependent Schools	14	12	24	56	8	24	10	32	180	10
EM Barracks	14	24	24	56	8	50	10	24	210	8
Crypto Center	72	48	12	70	8	10	30	8	258	6
Water Softening Equipment for Boiler Plants	14	12	12	42	40	30	20	32	202	9
Hardstand for Unit for Altert Loading and Maintenance	42	48	48	56	8	30	10	40	282	4
Automatic Data Equipment Electrical Distribution Lines	72	60	60	70	32	30	20	8	352	2
Rifle Range Barricades	42	24	60	70	8	20	10	40	274	5

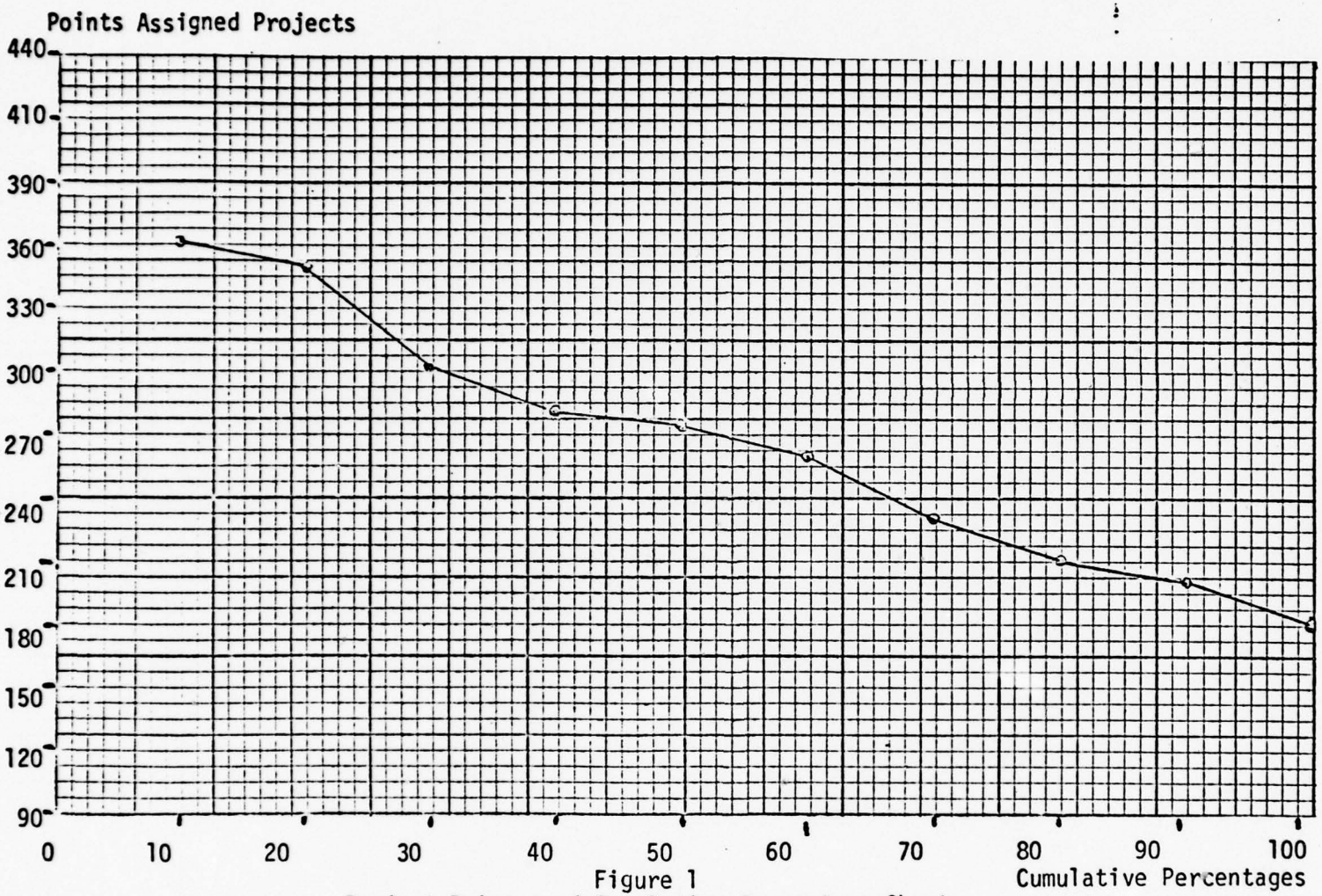

Figure 1
Project Points and Cumulative Percentage Chart

Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

Chester I. Barnard indicates that efficiency is obtaining the end sought without unsought negative consequences[3]. If unsought consequences exist, such as dissatisfaction of commanders with the management of the construction program, then the management may have been effective, but not efficient. However, no one can please everyone. A military engineer (whether in a district, division, or the facilities engineer of an installation) must remember that he is the commander of a large, complex organization in addition to being an engineer. Like all top management executives, his operations depend on the determinants (mission, performance, and constraints), the components (personnel and equipment), and the integrators (communications, operational sequence, and decisions by superiors). Since judgment of the efficiency with which he has managed his organization depends on the unsought consequences as well as the sought accomplishment of objectives, the engineer must approach the management of the design program, and especially the priority of accomplishment of projects, by careful planning. Advance preparation will bring confidence since it allows the necessary time for improvement[4].

Conclusions

This engineering report establishes a minor construction management technique in sufficient detail for a project engineer,

a planning committee, an installation commander and his facilities engineer, or district and division engineers to evaluate their performance in terms of project accomplishment based on true urgency vis-a-vis command pressure or individual preferences. This same system could be used to establish the priority list for any command's military construction submission, which after evaluation at Department of the Army level by the office of the Assistant Chief of Engineers is submitted to Congress. It is recognized that not all will accept the variables and degrees developed. This study developed the model. Utilization of this model to develop the variables and degrees determined most applicable to a particular installation, district, or division engineer's situation was the goal. Use of this management tool will quantify projects in a manner which reduces personal bias and shows customers that their projects were processed in accordance with a scientific analysis.

Recommendations

The variables which determine selection of construction projects, the degrees, and the points assigned the degrees are recommended for further study by anyone desiring to select the most urgent requirement from a list of highly desired ones when there are limiting factors such as capability of funds available. It is further recommended that this system of assigning a numerical value to the degree of variables be considered for applicability to any organization facing the same parameters. The

first comment made by the European Division Engineer (General Officer) when briefed on this study was, "I could have used a system like this to select the most-urgent research and development projects when I was assigned to Research and Development in the Pentagon."

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FOOTNOTES

1. Bruce C. Clark, *Guidelines for the Leader and Commander*, p. 14.
2. David W. Belcher, *Wage and Salary Administration*, p. 287.
3. Chester I. Barnard, *The Functions of the Executive*, p. 19.
4. N. Maier and J. Hayes, *Creative Management*, p. 54.

REFERENCES

A. MANAGEMENT AND ENGINEERING

1. Barnard, Chester I., *The Functions of the Executive*. Cambridge, Massachusetts: Harvard University Press, 1966.

2. Belcher, David W., *Wage and Salary Administration*. New Jersey: Prentice Hall, Inc., 1955.

3. Clark, Bruce C., *Guidelines for the Leader and Commander*. Harrisburg, Pennsylvania: Stackpole Company, 1964.

4. Drucker, Peter F., *The Practice of Management*. New York: Harper Brothers, 1954.

5. Koontz, Harold and O'Donnel, Cyril, *The Principles of Management*. New York: McGraw Hill, 1968.

6. Maier, N. and Hayes, J., *Creative Management*. New York: John Wiley and Sons, 1962.

7. McCormick, Ernest J., *Human Factors Engineering*. New York: McGraw Hill, 1964.

8. McFarland, Dalton E., *Management Principles and Practice*. New York: Macmillan, 1959.

9. Maynard, H. B., *Industrial Engineering Handbook*. New York: McGraw Hill, 1956.

10. Porter, Charles B., *Classroom Research in Industrial Arts*. Illinois: McKnight, 1964.

B. GOVERNMENT PUBLICATIONS

1. Act of Congress, 10 U.S.C. 2674.

2. Act of Congress, 10 U.S.C. 2233a.

3. Army Regulation 210-10, *Installations-Administration*.

4. Army Regulation 415-31, *Basic Facilities and Space Allowances for Peacetime Missions at Army Installations*.

5. Army Regulation 415-35, *Minor Construction*.

6. Army Regulation 420-10, *Repairs and Utilities-Post Engineering-General Provisions.*

APPENDIX

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Upgrade ammunition storage facilities to reduce possibility of break-in.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	5	72	Cannot allow the loss.
Improved Mission Accomplishment	5	60	Assigned by Congress.
Safety	5	60	Possible loss of life.
Command Interest	5	70	Highest.
Project Cost Amortization	1	8	Not a factor.
Health, Welfare, and Morale	1	10	Not a factor.
Time Restraints	5	50	Urgency requires immediate action.
Engineering Effort Required	4	32	Standard plans available. Only site adaptations required.
TOTAL POINTS		362	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Construct a troop barracks building for 40 guards stationed at a remote special weapons site. Troops are presently living in tents, and food is trucked in.

Project Rating Factors	Evaluation Deg.	Evaluation Pts.	Substantiation of Factor Rating
Mission Essentiality	2	28	Mission accomplishment capability improved less than one-third.
Improved Mission Accomplishment	2	24	Improved less than one-half.
Safety	2	24	Reasonable care will prevent accidents.
Command Interest	4	56	Inspector General report to major Army area commander concerning the poor conditions.
Project Cost Amortization	1	8	Long range amortized is possible if cost of transporting food, rotating personnel to showers, deterioration of equipment considered.
Health, Welfare, and Morale	5	50	Continuous exposure to the elements of wind, rain, mud, and cold. Morale low--Seven AWOLs last month.
Time Restraints	1	10	Time is not really a factor except that winter is coming.
Engineering Effort Required	4	32	Standard plans available.
TOTAL POINTS		232	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Construct facilities for stationing a brigade in northern Germany where none has been stationed previously.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	5	72	Improved security for Europe.
Improved Mission Accomplishment	5	72	Special program.
Safety	1	12	Not a factor.
Command Interest	5	70	High.
Project Cost Amortization	1	8	Not a factor.
Health, Welfare, and Morale	1	10	Not a factor.
Time Restraints	5	50	Urgently required; therefore, must be placed in design as soon as criteria developed.
Engineering Effort Required	1	8	All new facilities for which detailed plans and specifications must be developed.
TOTAL POINTS		302	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Dependent school, Patch Barracks, Stuttgart, location of important headquarters.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	1	14	Not a factor.
Improved Mission Accomplishment	1	12	Not a factor.
Safety	2	24	Reasonable care in use of buses will prevent accidents.
Command Interest	4	56	High level commander expresses extreme interest.
Project Cost Amortization	1	8	Not really a factor.
Health, Welfare, and Morale	3	24	Students must presently be bused approximately 45 minutes.
Time Restraints	1	10	Not really a factor.
Engineering Effort Required	4	32	Usually go turnkey design and engineer effort not excessive.
TOTAL POINTS		180	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: EM barracks, Anderson Barracks, Dexheim.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	1	14	Effect marginal.
Improved Mission Accomplishment	2	24	When the assigned mission in peacetime is considered to include facilities to attract the professional soldier.
Safety	2	24	Reasonable care will prevent accidents.
Command Interest	4	56	Accomplishment this year desired.
Project Cost Amortization	1	8	Not a factor.
Health, Welfare, and Morale	5	50	Serious morale problem. Located in rural area with no public transportation. Severely crowded conditions.
Time Restraints	1	10	Not a factor.
Engineering Effort Required	3	24	Some standard specifications available.
TOTAL POINTS		210	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Alteration of existing facilities to permit installation of a crypto center in the communications section of a major headquarters.

Project Rating Factors	Evaluation Deg.	Evaluation Pts.	Substantiation of Factor Rating
Mission Essentiality	5	72	New mission assigned which cannot be accomplished and needed for national security.
Improved Mission Accomplishment	4	48	Improved essential mission accomplishment.
Safety	1	12	Not a consideration.
Command Interest	5	70	Top management wants it.
Project Cost Amortization	1	8	Not a factor.
Health, Welfare, and Morale	1	10	Good conditions except for communications noise.
Time Restraints	3	30	Desired accomplishment time allows only 4 months to get under design.
Engineering Effort Required	1	8	Detailed and specialized attention required.
TOTAL POINTS		258	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Installation of water softening equipment at boiler plants to reduce calcium deposits in hot water lines, boilers, and hot water generators.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	1	14	Not a factor.
Improved Mission Accomplishment	1	12	Not a factor.
Safety	1	12	Not a factor.
Command Interest	3	42	Desired to reduce maintenance.
Project Cost Amortization	5	40	Could save the price of the project in less than 1 year in replaced pipes and boilers.
Health, Welfare, and Morale	3	30	Lack of heat caused by reduced heat transmission because of calcium causes disagreeable conditions.
Time Restraints	2	20	Should accomplish within 6 months or complete replacement of pipes and valves may be necessary.
Engineering Effort Required	4	32	Standard specifications available.
TOTAL POINTS		202	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Construct hardstand for unit authorized additional space according to AR 415-31. Loading time for alerts adversely affected by crowded conditions causing unit to reach alert positions late.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	3	42	Improve capability for a battalion.
Improved Mission Accomplishment	4	48	Cannot be accomplished without this project.
Safety	4	48	Constant attention needed to prevent accidents.
Command Interest	4	56	Top level management very unhappy about unit performance.
Project Cost Amortization	1	8	Not a factor.
Health, Welfare, and Morale	3	30	Can be measured as it adversely affects health and morale when performing maintenance in wet, muddy area.
Time Restraints	1	10	Not a factor.
Engineering Effort Required	5	40	Engineering effort minimal.
TOTAL POINTS		282	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Install electrical distribution system to permit acceptance of new automatic data processing equipment. Equipment required to be operational 24 hours daily.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	5	72	Improved national security.
Improved Mission Accomplishment	5	60	Special program.
Safety	5	60	Damage to equipment exceeding cost of project possible.
Command Interest	5	70	Start immediately.
Project Cost Amortization	4	32	Savings in generator repair and replacement and manpower savings will amortize cost in 18 months.
Health, Welfare, and Morale	3	30	Disagreeable conditions for stand-by generator guards exposed to cold, noise, vibrations, and wet weather.
Time Restraints	2	20	Should be started as soon as possible, but within 6 months.
Engineering Effort Required	1	8	Detailed nonstandard plans required.
TOTAL POINTS		352	

SAMPLE PROJECT PRIORITY SUBSTANTIATING DATA

PROJECT DESCRIPTION: Construct five barricades at rifle range at the 100, 200, and 300 meter firing positions. Barricades are to be constructed of heavy timber with earth core.

Project Rating Factors	Evaluation		Substantiation of Factor Rating
	Deg.	Pts.	
Mission Essentiality	3	42	Can presently use only 60 percent of firing positions because of possibility of accidents.
Improved Mission Accomplishment	2	24	Improved, but not significantly.
Safety	5	60	Possible loss of life.
Command Interest	5	70	Top management desires immediately.
Project Cost Amortization	1	8	Information not available.
Health, Welfare, and Morale	2	20	Morale affected by low scores which is blamed on over-supervision.
Time Restraints	1	10	Not a factor.
Engineering Effort Required	5	40	Minimal engineering effort.
TOTAL POINTS		274	